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# *The Prevalence of Elder Care Responsibilities Among the Work Force Population*

*Response Bias Among a Group of Cross-Sectional Surveys*

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This review synthesizes the findings of 17 independent studies dealing with the prevalence of elder care responsibilities among the work force population. Across-study, summative findings were: (a) approximately one fifth ( $M = 21.1\%$ ) to one quarter ( $Md = 23.1\%$ ) of employees provide care for an elderly dependent; primary study findings varied by a factor of nearly 25, ranging from a high estimate of 46.0% to a low of 1.9%; (b) the average response rate was fairly low ( $M = 45.0\%$  and  $Md = 41.1\%$ ), indicating that the studies captured only slightly more than one third, but less than half of all eligible in-sample assignments; (c) the correlation of prevalence and response rates was found to be  $r = -.69, p < .01$ ; (d) the partial correlation of prevalence with response rate, adjusted for the breadth of the elder care operational definition, remained significant,  $r = -.50, p < .05$ ; and (e) these two methodological characteristics together accounted for half ( $R^2 = .505$ ) of the variability in reported prevalence, response rate accounting for nearly all (95.4%) of this explained criterion variation. Bias due to nonresponse thus represents a potent threat to the validity of the mean prevalence estimate found in this body of research (21.1%). The implementation of statistical controls for nonresponse and definitional inconsistencies resulted in an estimated prevalence of 7.4% to 11.8%; however, this review outcome is tentative at best and must be tested with future, better controlled primary studies.

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*The issue of elder caregiving* and its effects upon the balance between work and family life has been the object of much recent conjecture but only limited systematic inquiry. Research findings concerning the growing population of people who provide informal care for older

family members or friends have suggested that approximately one third are also employed (Cantor 1983; Cryns and Gorey 1989; Friss 1989; Horowitz and Dobrof 1982; Lawton, Kleban, Moss, Rovine, and Glicksman 1989; Stone, Cafferata, and Sangl, 1987). Also, a recent secondary analysis of the Informal Caregivers component of the 1982 National Long Term Care Survey found that one half of all nonspouse caregivers were employed (Stone and Short 1990). Company executives, administrators, and employee assistance program staff have estimated the prevalence of elder caregiving among their employees to be nearly 20% (Bureau of National Affairs 1989; Gorey, Brice, and Rice 1990a, 1990b; The Travelers Insurance Companies 1985). At this point in time, the relevant demographic and social factors seem to have produced sufficient force to stimulate interest in policies and programs designed to prevent or ameliorate the hypothesized deleterious effects, both personal and/or corporate, of older dependent care among the work force population (Bureau of National Affairs 1988; Ingersoll-Dayton, Chapman, and Neal 1990; Liebig 1989; McNeeley 1988; New York Business Group on Health 1986; Washington Business Group on Health 1987).

### *Prevalence Estimation and Public/Private Policy*

Recent studies, designed essentially to measure the personal burdens and corporate costs associated with elder care, have found significantly negative consequences among samples of employee caregivers as compared to either nonemployed caregivers or non-caregiving employees (Creedon, Wagner, and Edinberg 1987; Enright and Friss 1987; Gibeau 1986; Gilhooly 1986; Neal, Chapman, Ingersoll-Dayton, Emlen, and Boise 1990; Scharlach 1987; Scharlach and Boyd 1989; Stone and Short 1990). This information, pertinent to the nature of problems experienced by employed elder caregivers and their employers, may not be very useful, however, without accurate estimation of prevalence (i.e., how many people experience such problems).

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**AUTHORS' NOTE:** This article is dedicated to the memory of Dr. Robert W. Rice, who died while the manuscript was being prepared for publication. Bob was our friend, teacher, and professional role model—we will miss him. His legacy of services does live on, though, through us and many others whom he touched along the way.

Rational planners charged with developing public or private interest policies need substantial knowledge relative to problem frequency, as well as its determinants and effects (Hennekens and Buring 1987). Furthermore, valid description of problem frequency may facilitate further analytic study. The primary purpose of this article is to respond to this need by estimating the prevalence of elder caregiving among the work force population. We will pursue this objective through an empirical, quantitative review of existing studies.

This review will thus focus on studies using employee-based sampling frames. General population-based studies will be excluded from the present analysis (except for those which report outcomes for work force subsamples); they provide a wealth of data useful for steering public policy in general, but not the means of estimating the prevalence of caregiving among workers. Policymakers, especially those operating at the corporate level, need to know the prevalence of caregiving within the work force. Intervention at the corporate level may well have ramifications that extend beyond the workplace. For example, it has been found among national samples of informal caregivers that between 7% and 33% had quit their jobs due to caregiving responsibilities (Muurinen 1986; Stone et al. 1987; Stone and Short 1990).

### *Methodological Issues and Review Strategy*

Traditional (i.e., qualitative) reviews of elder care and employment have been provided by Rosenbach (1989) and Wagner, Neal, Gibeau, Scharlach, and Anastas (1991). They render an important contribution by summarizing the most salient descriptive findings among this body of research. Their synthesis of a growing body of research findings lends support to the notion of the interconnectedness of work and caregiving outcomes (Scharlach, Sobel, and Roberts 1991). These previous reviews have, however, ignored some crucial methodological issues, and so a number of potential confounds impinge upon the validity of their findings. For example, what is the relationship between study response rate or the operational definition of elder care and reported prevalence? These methodological concerns, which impinge upon the valid interpretation of this knowledge base, remain unaddressed.

*Response rate.* Low response rates are a potentially serious threat to efforts to accurately estimate the prevalence of elder caregiving responsibilities within the work force (Stone and Kemper 1989). Methodological studies have documented the tendency for higher levels of survey participation among those with greater personal interest in the topic of the survey (Brownlee 1975; Donald 1960; Fowler 1988). If this same general tendency occurs within the realm of employed elder caregivers, low response rates could lead to overestimates of prevalence. That is, the percentage of elder caregivers in respondent samples would be higher than in the corresponding population because of the tendency for caregivers to self-select themselves into samples. There are many reasons that employees with elder care responsibilities might be attracted to participate in such a survey. It may allow them a chance to "let off steam" by voicing their concerns. Alternatively, caregivers may hope that the results of such surveys will lead to some concrete actions that will provide some relief of their caregiving burdens. Whatever the causes may be, such self-selection could bias sample results as indicators of population values if response rates are low enough for self-selection to be problematic. This line of reasoning points toward prediction of an inverse relationship between response rate and reported prevalence among the sample of studies to be reviewed. Thus, the review hypothesis is: Response rates will be negatively correlated with prevalence rates.

*Operational definition of caregiving.* Inconsistent definitions of caregiving are a second potential threat to precise estimates of prevalence (Barer and Johnson 1990). The present review is unlikely to yield a consistent prevalence estimate if the constituent studies adopt different definitions of the phenomenon: The choice of definition greatly influences estimation of the number of caregivers (Stone 1991). For example, one operational definition of elder caregiving might include only those caregivers who provide a minimum of 10 hours per week of direct, face-to-face care, whereas a second operational definition might include caregivers providing any type of care in any amounts. More employees would obviously qualify as caregivers under this second, broader definition. Because the operational definition of elder caregiving may well vary across this review's sample of studies and is also likely to be significantly associated with the prevalence estimate, it potentially confounds this review's central

hypothesized relation. The review hypothesis thus must be refined: Response rates will be negatively correlated (i.e., partial correlation) with prevalence rates, after adjustment for operational definition variability.

## *Method*

### *PRIMARY STUDY (I.E., SAMPLE) SELECTION*

To identify original reports of results that could be used in this analysis, computer searches were conducted of the following data bases for 1980-1991: *Ageline*, *ABI-Inform*, *Work/Family Life*, *Psychological Abstracts*, *Social Work Abstracts*, *Sociological Abstracts*, *Management Contents*, *Government Documents Index*, *Index Medicus* and *Dissertation Abstracts International*. Computer searches were augmented with a bibliographic review of retrieved manuscripts and with manual searches of the *Index to Social Sciences & Humanities Proceedings* and the *Directory of Published Proceedings*. These search procedures yielded 17 independent studies providing prevalence rates of elder caregiving among work force samples (see Table 2).

### *AGGREGATE SAMPLE DESCRIPTION*

*Personal characteristics.* The following properties characterize the caregiver respondent samples (see Table 1). Averaging across the 17 studies, the typical employed elder caregiver is 47.4 years of age, female (62.2%), and married (69.0%). Few studies coded data on caregiver job category (six studies) or employment status (three studies). Of those studies with valid data on these scores, however, the vast majority of the respondent samples worked full-time (96%) with the following job distribution: professional/technical (38%), management (22%), clerical (20%), production (8%), and other (12%).

As for the adults receiving care from the employed caregivers surveyed in these studies (see Table 1), their average age was 75.9, approximately three quarters (76.3%) were female, and one quarter (27.2%) were living in the same dwelling as the caregiver. Only three studies coded data on children who also reside with the caregiver(s);

TABLE 1  
 Characteristics of Elder Caregivers and Care Recipients:  
 Descriptive Statistics Computed Across Studies

<i>Descriptive Statistics</i>	<i>Characteristics</i>	
	<i>Caregiver</i>	<i>Care Recipient</i>
	<i>Age</i>	
<i>n</i> (%) <sup>a</sup>	5 (29.4)	7 (41.2)
Minimum	37	70
Maximum	60	85
Median ( <i>Md</i> )	47.0	76.0
Mean ( <i>M</i> )	47.4	75.9
Standard deviation ( <i>SD</i> )	8.4	4.8
	<i>Gender (% Female)</i>	
<i>n</i> (%) <sup>a</sup>	13 (76.5)	6 (35.3)
Minimum	48	69
Maximum	74	84
Median ( <i>Md</i> )	63.0	76.5
Mean ( <i>M</i> )	62.2	76.3
Standard deviation ( <i>SD</i> )	8.3	5.5
	<i>Married (%)</i>	<i>Cohabit (%)<sup>b</sup></i>
<i>n</i> (%) <sup>a</sup>	5 (29.4)	10 (58.8)
Minimum	58	8
Maximum	80	50
Median ( <i>Md</i> )	67.0	25.5
Mean ( <i>M</i> )	69.0	27.2
Standard deviation ( <i>SD</i> )	8.4	12.6

NOTE: Unit of analysis is the primary study outcome.

a. Number of studies (percentage of total,  $n = 17$ ) with codable data.

b. The percentage of care recipients living in the same dwelling as the caregiver.

these showed that about half (52%) of the employed elder caregivers also had children at home ( $M = 1.3$  children,  $SD = 0.4$ ).

*Study characteristics.* Table 2 provides summary information for these 17 studies. Eight national and nine regional surveys involved a total of 26,244 employed respondents. All studies were cross-sectional in design. Only two of these surveys relied on face-to-face interviews (Spitz and Logan 1990; Stone and Kemper 1989) and only one interviewed care recipients (Stone and Kemper 1989). Thirteen of the surveys focused on employees of particular organizations ( $Md = 1.0$  company and  $M = 5.9$  companies,  $SD = 9.6$ ); the others used community-

TABLE 2  
Study Sampling Methodologic Characteristics

Reference	State	Sampling Frame		Age	Sample	
		Companies	Employees		Method	n
1. AARP 1987	National	5	4,851	All	Mail	1,338
2. Anastas et al. 1990	National	18	7,154	40+	Mail	1,309
3. Brice et al. 1988	NY	1	125	All	Mail	59
4. Carter & Piktialis 1988	National	1	5,000	All	Mail	3,900
5. Creodon et al. 1987	CT	3	1,370	40+	Mail	504
6. Fortune Magazine & John Hancock Financial Services 1989	National	n.a.	2,000	All	Mail	581
7. Hewitt Associates 1989	National	1	4,000	All	Mail	1,643
8. Hynes 1988	CO	1	568	All	Mail	307
9. Jefferson Area Board for Aging 1989	VA	10	10,482	All	Mail	2,809
10. Neal et al. 1990	OR	33	27,832	All	Mail	9,573
11. Neff 1992 <sup>a</sup>	National	1		All	Mail	
12. Retirement Advisors 1986	National	n.a.	500	50+	Mail	144
13. Rosenbach 1989	DC	1	1,200	All	Mail	240
14. Scharlach & Boyd 1989	CA	1	3,658	All	Mail	1,898
15. Spitz & Logan 1990	NY	n.a.	1,783	40+	Face-to-face	1,200
16. Stone & Kemper 1989	National	n.a.		All	Face-to-face	
17. The Travelers Insurance Companies 1985	CT	1	1,412	30+	Mail	739
Descriptive statistics						
Minimum		1	125			59
Maximum		33	27,832			9,573
Median		1.0	2,000			1,200
Mean		5.9	4,796			1,736
Standard deviation		9.6	6,978			2,399

a. C. Neff, personal communication, January 2, 1992; Neff is program manager, Work/Life Department, IBM Corp., Purchase, NY.



based sampling frames. It should be noted that these four community- or general-population-based studies were not conceived as work force studies, but they reported outcomes on such subsamples. For the most part, these 17 studies appeared in print quite recently ( $M = 1988.5$ ). Slightly more than one third (six studies) of these survey results were published in peer-reviewed journals or monographs. The other reports were released through research centers, professional conferences, or corporate sources.

## Results

### PREVALENCE RATE

As shown in Table 3, the synthesis of results from these 17 surveys indicates that approximately one fifth to one quarter of these employed respondents provide care for an older person ( $Md = 23.1\%$ ,  $M = 21.1\%$ ,  $SD = 12.7$ ). Perhaps the most noteworthy result, however, concerns the variance around the average prevalence rate ( $SD^2 = 161.3$ ). Prevalence rates vary by a factor of nearly 25. That is, the highest estimate (46.0%) is almost 25 times as large as the lowest estimate (1.9%).

*Review hypothesis.* The average response rate across the 17 surveys was fairly low ( $Md = 41.1\%$ ,  $M = 45.0\%$ ,  $SD = 20.7$ ), indicating that the studies captured less than half of all eligible in-sample assignments (see Table 3). The review hypothesis proposes that survey response rates can account for a significant proportion of the variance in care prevalence rates. To test this hypothesis, the prevalence rate reported in each survey was correlated with response rate. As predicted, this correlation was significant and negative;  $r = -.69$ ,  $p < .01$ . Thus, nearly half (47.5%,  $R^2 = .476$ ) of the variance in prevalence rates can be accounted for by differences in response rates.

Correlation coefficients and their associated test statistics calculated among small samples may be reactive to extreme scores. An outlier analysis demonstrated that such a phenomenon is not a salient alternative explanation for the above finding. For example, study No. 16, with a response rate of 91.0%, is the most severely outlying study (i.e., more than two  $SD$ s above the mean, see Table 3) and removal of this study from the analysis still resulted in a significant inverse

TABLE 3  
Study Response Rate and Reported Elder Care Prevalence

<i>Reference</i>	<i>Response Rate (%)</i>	<i>Elder Care Prevalence (%)</i>
1	27.6	24.0
2	18.3	32.0
3	47.2	34.0
4	78.0 <sup>a</sup>	8.0
5	36.8	25.5
6	29.1	37.0
7	41.1	8.0
8	54.0	11.1
9	26.8	9.5
10	34.4	23.0
11	62.0 <sup>a</sup>	16.0 <sup>a</sup>
12	28.8	28.0
13	20.0	46.0
14	51.9	23.1
15	67.3	3.7
16	91.0 <sup>b</sup>	1.9
17	52.3	28.0
Summary statistics		
Minimum	18.3	1.9
Maximum	91.0	46.0
Median	41.1	23.1
Mean	45.0	21.1
Standard deviation	20.7	12.7
Pearson's <i>r</i>		-.69**

a. C. Neff, personal communication, January 2, 1992: Program Manager, Work/Life Department of IBM Corporation, Purchase NY.

b. R. Stone, personal communication, January 8, 1992: Senior Policy Analyst, Project HOPE, Center for Health Affairs, Chevy Chase, MD.

\*\* $p < .01$ .

response rate-prevalence rate correlation;  $r = -.62$ ,  $p < .01$ . In fact, removal from the analysis of the two studies with the most extreme response rates, high and/or low, resulted in similarly significant findings. It does not seem that a few extreme and potentially extraneous study outcomes are driving the results of this review.

Clearly, valid estimates of population parameters require high response rates. Babbie (1989) has suggested the criterion of 60% as characterizing a "good" survey. Studies were grouped by this criterion (i.e., response rate  $< 60\%$  vs.  $\geq 60\%$ ) and compared on reported

prevalence. The mean prevalence estimate was 25.3% ( $SD = 11.0$ ) for the 13 studies with low response rates and 7.4% ( $SD = 6.3$ ) for the four studies with high response rates;  $F(1, 15) = 9.32, p < .01$ . The latter statistic (7.4%) probably represents a more valid estimate of the true population prevalence than the former (25.3%): It is less likely to be influenced by bias due to nonresponse.

#### OPERATIONAL DEFINITIONS

The primary operational definitions of caregivers are listed, by study, in the first column of Table 4. All studies solicited self-selection of employees who currently provide some care or assistance for an older adult family member or friend. Some studies also provided additional information such as care recipient age, nature of the relationship between caregiver and recipient, or caregiving intensity. Eight, five, and one study, respectively, added criteria concerning minimum care-recipient age (55+ or 60+), specific relationship (i.e., relative or dependent), and minimum caregiving intensity (3+ hours per week).

The addition of an age criterion alone to the general operational definition of caregiving did not significantly affect prevalence estimation. However, comparison of the 11 studies that used the general operational definition alone or the general definition plus the minimal age criterion to the six studies that used additional relationship or caregiving intensity criteria provided significant differences in mean prevalence estimates: 26.4% ( $SD = 11.1$ ) versus 11.5% ( $SD = 9.6$ )  $F(1, 15) = 7.63, p < .05$ . Not surprisingly, the broader the operational definition of elder caregiving, the higher was the study's reported prevalence rate. The lower statistic (11.5%) probably represents a more valid estimate of true population prevalence than the higher (26.4%), at least in terms of steering corporate intervention plans: It is the group that is more likely to be care-burdened.

A number of other measures were used in some studies to describe more fully the nature and extent of caregiving activities engaged in by employed elder caregivers (see Table 4). Synthesis of valid data on these variables shows that typical or average employed elder caregivers may be categorized as secondary caregivers (primary = 41.9%), most often providing care for a parent or parent-in-law (74.2%), not

often engaged in daily direct personal care (17.9%), and more often engaged in more indirect instrumental care: assistance with instrumental activities of daily living (IADLs) (58.9%), transportation (58.1%), visitation (67.4%), and direct financial assistance (34.7%). Fewer studies reported valid data on intensity and duration of caregiving activities; however, the mean across studies on these indices was 8.8 hours per week and 5.6 years, respectively. None of these post hoc measures of elder caregiving were found to be significantly related to reported prevalence.

*Review hypothesis—with adjustment for operational definition.* Elder caregiving, as operationally defined in the preceding section (dummy coded; 0 = narrower and 1 = broader), was found to be associated (i.e., point-biserial correlation) with both study response rate ( $r = -.67, p < .01$ ) and reported prevalence ( $r = .58, p < .05$ ), so it represents a potential confound which ought to be accounted for in examining this review's hypothesis. The partial correlation of study response rate with reported prevalence, adjusted for breadth of the elder caregiving operational definition, was found to be  $r = -.50, p < .05$ . Even after controlling for between-study differences in measurement of elder caregiving, study response rates may still account for one quarter ( $R^2 = .250$ ) of the variance in prevalence estimates.

#### FURTHER INTERPRETATIVE ANALYSES

The prevalence estimate from each study was entered into a linear regression model on study response rate and the elder care operational definition. These study methodological characteristics together accounted for half ( $R^2 = .505, F(2, 14) = 7.15, p < .01$ ) of the variability in reported prevalence. Response rate alone accounted for nearly all (95.4%) of this explained criterion variation (.482/.505). Outcomes based upon models with log or probit transformed data were not materially different from this untransformed analysis. This finding, together with the predominantly low response rates found among this body of research, seriously threatens the validity of its findings.

Given the rather great sample size ( $N$ ) variability among the reviewed studies and the presumed association of more extreme prevalence estimates, both high and low, with smaller samples, it may be surmised that the size of the sample is correlated with prevalence in a

TABLE 4  
Measurement of Elder Caregiving by Study

Reference	Selection Criteria <sup>a</sup>	Primary Caregiver (%)	Relationship (%)			Receives Assistance With (%)					Average Quantity	
			Parent or In-Law	Other Relative	Friend	ADLs <sup>b</sup>	IADLs <sup>c</sup>	Trans. <sup>d</sup>	Fin. <sup>e</sup>	Visit	Intensity (Hrs/Wk)	Duration (Years)
1		42	79	55	16	15	54	50	27	76	6.3	
2		42	77	9	14	16	68	64	44		8.4	6.8
3	55+	40				15	65	50	25	60	8.3	4.8
4	60+, Dependent										10.0	
5	55+	42	63	33	4	30	66	74	63	54		
6	55+	41	67	21	12	22	47	59	20	58	12.8	3.9
7											9.5	
8	Dependent											
9			60	24	16	37	60	42	36	57		
10	60+	42	73	19	8	13	67	75	25	96	6.0	6.5
11	60+, Dependent											
12	Relative		88	12	0							
13		42										
14	60+	42	80	16	4	7	49	53	45	53	10.9	6.5
15	3+ hrs/wk										6.0	5.5
16	Relative	38										
17	55+	48	81	10	9	13	57	62	30	76	10.2	5.5

Descriptive statistics

Minimum	38	60	5	0	7	47	42	20	53	6.0	3.9
Maximum	48	88	33	16	37	68	75	63	96	12.8	6.8
Median	42.0	77.0	16.0	9.0	15.0	58.5	56.0	31.0	60.0	9.0	5.5
Mean	41.9	74.2	16.6	9.2	17.9	58.9	58.1	34.7	67.4	8.8	5.6
Standard deviation	2.5	9.2	8.7	5.7	9.2	7.5	10.8	12.9	14.6	2.3	1.0

a. All studies solicited self-selection of employee respondents who "currently" provide "some care or assistance" for an "older adult" "family member or friend": additional specific age, relational, or caregiving intensity criteria by study are displayed here.

b. Activities of daily living, that is, personal care (e.g., grooming, dressing, eating, etc.).

c. Instrumental ADLs, that is, interactions with environment (e.g., housekeeping, shopping, meal preparation, etc.).

d. Transportation.

e. Direct financial assistance.

f. All sample respondents receive assistance with one or more ADL and/or IADL.

quadratic fashion and thus, confounds the response rate-prevalence association. However, neither response rate ( $r = -.03$ ) or prevalence ( $r = -.07$ ) are significantly associated with  $n^2$  among this group of studies, so it cannot confound their relationship. For example, forced entry of study  $n^2$  and/or  $n$  into the above regression model made no material difference in its outcome.

Next, studies with low response rates ( $< 60\%$ ) were compared to those with high response rates ( $\geq 60\%$ ) on reported elder caregiving prevalence, adjusting for the breadth of the caregiving operational definition as coded previously (ANCOVA). The adjusted mean prevalence estimate was 24.0% for those studies with low response rates and 11.8% for those with high response rates;  $F(1, 14) = 8.06, p < .05$ . Again, for purposes of identifying a potentially care-burdened or "at risk" population of employed elder caregivers, the lower statistic (11.8%) probably represents a more valid estimate of the true population prevalence.

Finally, in addition to the two methodological characteristics, study response rate and the operational definition of elder caregiving, which were found to be significantly associated with reported caregiving prevalence, it may be of equal importance to note those characteristics not associated with prevalence. All of the remaining variables listed in tables 1, 2, and 4 were not significantly related to prevalence:

- caregiver age, gender, and marital status
- care recipient age, gender, and residence (cohabit, yes/no)
- other study characteristics—national/regional/company/community-based, peer-reviewed (yes/no), the year released, size of the sampling frame or resultant sample
- qualitative care measures—proportion of sample primary/other caregivers, proportion of the samples providing assistance with ADLs, IADLs, transportation, direct financial assistance, or visitation
- intensity of care provided (hours/week)
- duration of care (years).

As a last note, only four studies provided data on the characteristics of the corporation(s) they sampled (e.g., age and gender distributions). Thus, empirical prediction of elder care prevalence by such characteristics was not possible at the level of this analysis.

## Discussion

Currently available research does not provide a valid basis for estimating the prevalence of elder caregiving within the work force population. Based on 17 studies, the mean prevalence rate is 21.1%. Unfortunately, prevalence rates found in individual studies range from 1.9% to 46.0%. When compared to a possible range of 0-100%, this empirical range of prevalence estimates represents some advance in our knowledge, but not much. Policy planners should feel uncomfortable using such imprecise data when making important decisions relevant to employed caregivers.

Future studies estimating the prevalence of elder caregivers in the work force should seek to improve previous research in two key areas: (a) the response rate and (b) the operational definition of elder caregiving. Approximately half ( $R^2 = .505$ ) of the variance in prevalence rates appears to be the product of differences in these two variables.

### RESPONSE RATE

Consistent with this review's hypothesis, a significant negative correlation was found between study response rate and reported prevalence. One interpretation of this correlation is that employees with elder caregiving responsibilities have been more likely to self-select themselves into the samples upon which these survey results are based.

To illustrate the potential bias introduced by differential self-selection of caregivers, imagine that 100% of all caregivers choose to participate in such surveys when invited to do so. Further, imagine that 20% of the population are caregivers. In a survey with a total response rate of 40%, the sample estimate of 50% caregiving prevalence would be seriously biased; it is two and one-half times the value of the population parameter (20%). Unfortunately, this scenario is not as implausible as we might wish. The median response rate among the 17 studies reviewed was actually close to the 40% value used in the scenario ( $Md = 41.1\%$ ). And although it is not reasonable to expect 100% of the caregivers in a sampling frame to participate and thereby end up in the sample, we could reasonably expect much higher participation rates among caregivers than among noncaregivers. Any such tendency



will produce an upward bias in the sample prevalence rate (i.e., the sample rate will be higher than the population rate).

There is, of course, no way of knowing just how serious the response rate problem might be. By definition, we do not know how nonrespondents would respond to the questions about elder caregiving. The best we can do in such a situation is to consider a range of different scenarios and the threat of bias in each such set of conditions. It seems quite likely, however, that the mean sample prevalence rate of 21.1% overestimates the true population prevalence. Perhaps our best guess as to the likely prevalence of elder caregiving among the work force population would be the point estimate of 7.4%, which is based upon those four studies which reported 60% or better response rates.

A minimum prevalence estimate can be calculated by assuming that 100% of the caregivers responded to the surveys (i.e., that all the nonrespondents were noncaregivers). If we make this assumption, prevalence is calculated by dividing the number of identified caregivers by the total number of potential respondents in the sampling frame. These minimum estimates range from 1.7% to 16.0% in the 17 original surveys included in this review; the average is 7.8% ( $SD = 4.1$ ). Based on available research, it is probably reasonable to assume that at least 8% of the work force has some elder care responsibilities.

#### *OPERATIONAL DEFINITIONS*

The breadth of the operational definition of elder caregiving was found to be directly associated with reported prevalence. It was also observed that the majority of studies used a broad definition of caregiving. The prevalence point estimate here, based upon those six studies measuring elder caregiving most narrowly, is 11.5%. Even such an adjusted prevalence estimate probably is an overestimate of the true population parameter. Among the six studies mentioned above, only one included a minimum criterion of direct contact between the elder caregiver and care recipient (i.e., 3+ hours/week).

It is clear that the choice of any given measure of elder caregiving depends on the research question being addressed or the particular policy being developed (Stone 1991): none are inherently better or worse than the others. However, implicit in this particular body of

research is the need to identify samples of employees who are at risk of experiencing adverse personal consequences of caregiving and/or may adversely affect their employers through diminished on-the-job efficiency or effectiveness. The studies included in this review, as a whole, do not do a good job of identifying such people: generally, they effectively target those employees with some care responsibility, but not those engaged in ongoing, intensive, direct care provision for an older person.

It is time for these surveys to go beyond global notions of elder care. Ideally, prevalence studies should deal with caregiving as a dimensional rather than a categorical concept. From this perspective, the task becomes one of determining the prevalence of providing specific types of elder care. No single operational definition of elder caregiving will be appropriate for all potential uses of prevalence data. From a policy perspective, it would be far more useful to address a range of specific caregiving roles, from absolutely no caregiving responsibilities to the provision of round-the-clock care. Such descriptions of caregiving should be based on specific, distinct activities. Needless to say, studies designed to address these issues ought to make every effort to bolster response rates through the use of such methods as multiple nonrespondent follow-ups, incentive/financial remuneration for response, and a brief survey questionnaire. At the very least, all work within this field must be interpreted within the context of study response rate and the specific elder care operational definition used, as these two methodological characteristics probably account for roughly half the explanation of study reported prevalence.

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